DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 31-42 and 46-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art (APA) (see specification: page 1, lines 4-18 and page 3, lines 2-25) in view of Chu et al. (US 4,471,145), Cosyns et al. (US 4,133,841) and O'Rear (US 6,392,108).

Regarding claims 31-42 and 46-52, the APA discloses that a process to generate heat including the process steps of: supplying kerosene or gas oil as fuel to an evaporation surface of an evaporator burner oven; evaporating at least a portion of the fuel into space surrounding the evaporation surface; and combusting the evaporated fuel with oxygen-containing gas to generate heat is known (see specification: page 1, lines 4-18 and page 3, lines 2-25). The APA further discloses that the evaporator burner

oven can be a conventional evaporator burner oven having an evaporation surface comprising a wick or a conventional evaporator burner oven having an evaporation surface comprising openings through which fuel can be supplied (see specification, page 2, line 36 to page 3, line 19). The only deference between applicants' alleged invention and that of the admitted prior art is that the fuel supplied to the evaporator burner oven in the instantly claimed invention comprises a Fischer-Tropsch derived fuel comprising Fischer-Tropsch product having a density of between 0.65 g/cm^3 and 0.8 g/cm^3 at 15^{o}C.

However, as evidenced by the references Chu et al., Cosyns et al., and O'Rear, it is well known in the art to utilize a Fischer-Tropsch derived product to produce a liquid fuel having functional equivalence to a petroleum derived fuel.

Chu et al. disclose that liquid fuel comprising Fischer-Tropsch derived fuel can be used to produce heating oil (see col. 1, lines 48-61).

Cosyns et al. teach that a liquid fuel derived from Fischer-Tropsch syntheses process has the same use as oil (from oil fields, implied) and its derivatives (see col. 1, lines 5-45). Cosyns et al. further disclose Fischer-Tropsch derived products having density between 0.695 g/cm^3 and 0.862 g/cm^3 at 15; and Fischer-Tropsch derived products comprising kerosene cuts (200^{o}C - 250^{o}C) and gas oil cuts (250^{o}C - 360^{o}C) (see col. 14, lines 45-60 and col. 15, lines 50-66).

O'Rear discloses that Fischer-Tropsch derived fuels have very low levels of sulfur and nitrogen, have excellent burning properties, and can be used as an environmentally friendly "green fuel" (see col. 6, lines 54-67 and col. 13, lines 18-20).

O'Rear further discloses that Fischer-Tropsch derived fuels have excellent burning properties and have paraffin components > 70%, less than 1% ppm by weight of sulfur and generally contain no aromatic compounds (see col. 6, lines 54-67). O'Rear further discloses that the products of Fischer-Tropsch process include hydrocarbons boiling bellow 700° F (371° C) (see col. 11, lines 1-25). O'Rear further teaches that additives can be included to Fischer-Tropsch derived products (see col. 10, lines 46-55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a liquid fuel comprising a Fischer-Tropsch derived fuel comprising Fischer-Tropsch product in any amount and having a density of between 0.65 g/cm^3 and 0.8 g/cm^3 at 15°C, as the liquid fuel supply in the conventional process of generating heat because, as evidenced by the reference O'Rear, Fischer-Tropsch derived fuels have environmentally beneficial effects and are recognized as an environmentally friendly "green fuel" (see col. 6, lines 54-67). Furthermore, Cosyns et al. teaches that Fischer-Tropsch derived products having density between 0.695 g/cm^3 and 0.862 g/cm^3 at 15°C are used to produce liquid fuel products having functional equivalence to petroleum derived kerosene and gas oil (see col. 14, line 45 to col. 15, line 66).

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to reasonably expect that combusting a liquid fuel comprising Fischer-Tropsch derived fuel product, supplied to any liquid fuel burner including to a conventional evaporator burner oven, would have resulted in increased efficiency and a reduced unburned hydrocarbon content compared to combusting a petroleum derived

kerosene fuel under the same conditions using the same burner because, as evidenced by the reference, O'Rear, Fisher-Tropsch derived fuels have superior burning characteristics than petroleum derived fuel (see col. 6, lines 54-67 and col. 13, lines 18-20). It also would have been obvious to one having ordinary skill in the art at the time the invention was made to reasonably expect that combusting a liquid fuel comprising Fischer-Tropsch derived fuel product, supplied to any liquid fuel burner including to a conventional evaporator burner oven, would have resulted in producing a reduced Smoke Number and a reduced carbon monoxide emissions compared to combusting a petroleum derived kerosene fuel under the same conditions using the same burner because, as evidenced by the reference, O'Rear, Fisher-Tropsch derived fuels have superior burning characteristics than petroleum derived fuel (see col. 6, lines 54-67 and col. 13, lines 18-20).

4. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art (APA) (see specification: page 1, lines 4-18 and page 3, lines 2-25) in view of Chu et al. (US 4,471,145), Cosyns et al. (US 4,133,841) and O'Rear (US 6,392,108) as applied to claim 31 above, and further in view of Brown et al. (US 3,607,074).

Regarding claim 43, none of the references mentioned above teach or suggest adding an odor marker to a liquid fuel supply. Brown et al. discloses an odor marker for liquid fuels (see col. 1, lines 22-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the liquid fuel of Chu et al. or O'Rear or Cosyns et al. to include an odor marker according to the teaching of

Brown et al. because Brown et al. teach that an odor marker is a reliable and inexpensive method for identifying liquid fuels.

5. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art (APA) (see specification: page 1, lines 4-18 and page 3, lines 2-25) in view of Chu et al. (US 4,471,145), Cosyns et al. (US 4,133,841) and O'Rear (US 6,392,108) as applied to claim 41 above, and further in view of Thrasher et al. (US 4,932,979).

Regarding claim 45, none of the references mentioned above teach or suggest adding a color marker to a liquid fuel supply. Thrasher et al. disclose a liquid fuel comprising a color marker for the purpose of producing a colorant flame (see Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a color marker to the liquid fuel of Chu et al. or O'Rear or Cosyns et al. for the purpose of detecting the flame produced when the liquid fuel of Chu et al. or O'Rear or Cosyns et al. are combusted because, as evidenced by the reference Thrasher et al., it is advantageous to color a colorless flame for identification purposes and safety (see col. 1, lines 40-60).

6. Claims 31 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wuest et al. (US 6,540,505) in view of Chu et al. (US 4,471,145), Cosyns et al. (US 4,133,841) and O'Rear (US 6,392,108).

Regarding claims 31 and 44, Wuest et al. disclose a burner for use in a process to generate heat (see col. 4, line 32 to col. 5, line 24). Wuest et al. disclose that the burner in accordance to their invention is particularly suitable for burning extra light

heating oil (see col. 2, lines 18-25). The reference Wuest et al. does not require that the liquid fuel supplied to the burner contain metal-based combustion improvers. Thus, the liquid fuel for use in the process of Wuest et al. can be assumed to have no metal-based combustion improvers. Wuest et al. further teach that the process to generate heat comprises: supplying a liquid fuel to an evaporation surface of the burner without atomizing the fuel into small droplets under pressure (see col. 6, lines 27-31); evaporating the fuel into space surrounding the evaporation surface; combusting the evaporated fuel with oxygen-containing gas to generate heat (see col. 4, line 48 to col. 5, line 18); and detecting the flame using an ionization measuring device (see col. 3, lines 15-25). Wuest et al. are, however, silent with respect to the liquid fuel or the extra light heating oil comprising a Fischer-Tropsch derived fuel product. However, as evidenced by the references Chu et al., Cosyns et al., and O'Rear, it is well known in the art to utilize a Fischer-Tropsch derived product to produce a liquid fuel having functional equivalence to a petroleum derived fuel.

Cosyns et al. teach that a liquid fuel derived from Fischer-Tropsch syntheses process has the same use as oil (from oil fields, implied) and its derivatives (see col. 1, lines 5-45). Cosyns et al. further disclose Fischer-Tropsch derived products having density between 0.695 and 0.862 g/cm^3 at 15^o C; and products comprising kerosene cuts (200^{o}C - 250^{o}C) and gas oil cuts (250^{o}C - 360^o C) (see col. 14, lines 45-60 and col. 15, lines 50-66).

O'Rear discloses that Fischer-Tropsch derived fuels have very low levels of sulfur and nitrogen, have excellent burning properties, and can be used as an

environmentally friendly "green fuel" (see col. 6, lines 54-67 and col. 13, lines 18-20). O'Rear further discloses that Fischer-Tropsch derived fuels have excellent burning properties and have paraffin components > 70%, less than 1% ppm by weight of sulfur and generally contain no aromatic compounds (see col. 6, lines 54-67). O'Rear further discloses that the products of Fischer-Tropsch process include hydrocarbons boiling bellow 700^{o} F (371^{o} C) (see col. 11, lines 1-25). O'Rear further teaches that additives can be included to Fischer-Tropsch derived products (see col. 10, lines 46-55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a liquid fuel comprising any amount of a Fischer-Tropsch derived fuel product, meeting a specification of a heating oil or an extra light heating oil, according to the teachings of O'Rear or Chu et al. or Cosyns et al. as the liquid fuel supply for the burner of Wuest et al. because, as evidenced by the reference O'Rear, Fischer-Tropsch derived fuels have environmentally beneficial effects and are recognized as an environmentally friendly "green fuel" (see col. 6, lines 54-67). Furthermore, Cosyns et al. teaches that Fischer-Tropsch derived products having density between 0.695 g/cm^3 and 0.862 g/cm^3 at 15^{o}C are used to produce liquid fuel products having functional equivalence to petroleum derived kerosene and gas oil (see col. 14, line 45 to col. 15, line 66).

Response to Arguments

4. Applicant's arguments filed on January 8, 2010 have been fully considered but they are not persuasive.

5. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, as evidenced by the references Chu et al., Cosyns et al., and O'Rear, it is a generally available knowledge to one of ordinary skill in the art to utilize a Fischer-Tropsch derived product to produce a liquid fuel having functional equivalence to a petroleum derived fuel. Furthermore, as evidenced by Applicants' admitted prior art (see specification: page 1, lines 4-18 and page 3, lines 2-25), it is known in the art to supply a petroleum derived fuel to an evaporation surface of a conventional evaporator burner oven in a process to generate heat. Accordingly, the examiner maintains the position that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a liquid fuel comprising a Fischer-Tropsch derived fuel comprising Fischer-Tropsch product in any desired amount, as the liquid fuel supply in the conventional

process of generating heat because, as evidenced by the reference O'Rear, Fischer-Tropsch derived fuels have environmentally beneficial effects and are recognized as an environmentally friendly "green fuel" (see col. 6, lines 54-67). Furthermore, Cosyns et al. teaches that Fischer-Tropsch derived products having density between 0.695 g/cm^3 and 0.862 g/cm^3 at 15^{o}C are used to produce liquid fuel products having functional equivalence to petroleum derived kerosene and gas oil (see col. 14, line 45 to col. 15, line 66).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lessanework Seifu whose telephone number is

(571)270-3153. The examiner can normally be reached on Mon-Thr 9:00am-6:30pm; Fri 9:00am-1:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. S./
Examiner, Art Unit 1797

/Walter D. Griffin/
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